

Palaeolithic Archaeology Teaching Resource Box

Hominin Species: Advanced

Who made the first stone tools in Britain?

It is not certain whether *Homo heidelbergensis* made the 700,000 year old stone tools found at *Pakefield* (the earliest British Lower Palaeolithic site), since no fossils were found there, but it is certainly possible. It is almost certain however that the stone tools at Boxgrove (500,000 years old) were made by *Homo heidelbergensis*: archaeologists have found a leg bone (tibia) and two incisors (front teeth) from this species at the site.

What were the Evolutionary Origins of Britain's Hominin Species?

- The origins of *Homo heidelbergensis* are currently somewhat uncertain: this is mostly due to the very small sample of fossils from Europe prior to the appearance of the *Homo heidelbergensis* fossils (which mostly date to after 500,000 years ago). The two most likely candidates are *Homo ergaster* (a form of hominin that is found in Africa after about 1.8 million years ago and which is the probable ancestor of *Homo erectus*, the hominin that is found throughout Asia after about 1.5 million years ago) and *Homo antecessor* (an 800,000–900,000 year old species from the site of *Atapuerca* in Spain): if *Homo ergaster* is the ancestor then *Homo heidelbergensis* may have evolved outside of Europe; if *Homo antecessor* is the ancestor, then an evolution inside Europe is more likely.
- The Neanderthals evolved in Europe from *Homo heidelbergensis* (see also below) by 200,000–300,000 years ago at the *very latest*: in fact, many of the earlier *Homo heidelbergensis* fossils (such as the 400,000 year old skull fragments from Swanscombe in the UK) show traces of the Neanderthals to come. This suggests to archaeologists that the evolution of the Neanderthals was a relatively gradual process, and explains other parallels between the species, such as their well developed musculature.
- *Homo sapiens* seems to have evolved in Africa from the African form of *Homo heidelbergensis* (the equivalent of the European form of *Homo heidelbergensis*). This means that the earliest *Homo heidelbergensis* (dating to around 600,000 years ago) is the last common ancestor of both the Neanderthals and modern humans: but the evolutionary line then split between Europe (leading to the Neanderthals) and Africa (leading to modern humans).

What Caused the Neanderthal Disappearance?

The disappearance of the Neanderthals from Europe has been a source of controversy for many years. Some archaeologists have argued that the Neanderthals evolved into modern humans and are our direct ancestors.

However a number of lines of evidence suggest instead that the Neanderthals were driven to extinction by modern humans: firstly, there are very few *transitional fossils* that would indicate the evolution of Neanderthals into modern humans; secondly, such an evolutionary event would have had to occur over just a few thousand years, a very short period of time for the many changes required; thirdly, recent studies of the DNA in Neanderthal fossils suggest that there are no traces of it in modern human populations, and that therefore the Neanderthals were not our direct ancestors; and fourthly, the archaeological record presents a convincing picture of modern humans spreading across Europe from east to west: the general impression is therefore of a new colonising species (modern humans) coming into Europe from outside (Africa and the Near East) and replacing the Neanderthals.

It is important to remember however that the extinction of the Neanderthals did not necessarily involve direct conflict and violence: it is more likely that the Neanderthals were simply out-competed for resources (food and living sites for example) by modern humans.

Terminology:

Atapuerca: the caves at Atapuerca in northern Spain contain a rich fossil record, including the only evidence for the hominin species *Homo antecessor*. These are some of the earliest European hominin fossils, dating to around 800,000–900,000 years ago, and have highlighted the potential complexity of hominin evolution within, and around the margins of, Europe.

Transitional fossils: transitional fossils lie between two distinct species and should show traces of both the ancestral and the descendent hominins: for example, in Africa there are transitional fossils which show traces of both African *Homo heidelbergensis* and *Homo sapiens* (modern humans).

Pakefield: this site, reported in 2005, has produced the earliest stone tools in the British Palaeolithic, dating to around 700,000 years ago. A key question concerns whether the Pakefield occupation represents a temporary excursion to Britain (the evidence suggests a warm climate associated with the stone tools) or the beginnings of a more permanent Lower Palaeolithic occupation.

Quiz Questions:

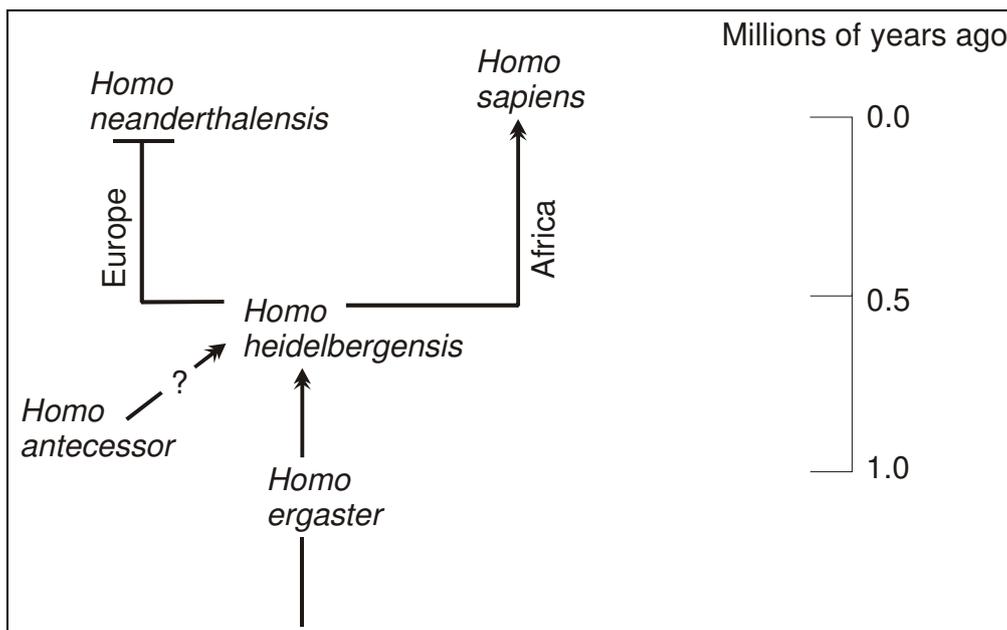
1. Should archaeologists ever be 100% certain that a particular hominin species made a particular collection of stone tools?
2. What might the well-developed musculature of the Neanderthals and *Homo heidelbergensis* tell us about their lifestyles?
3. What aspects of modern human behaviour might allow modern humans to out-compete the Neanderthals for food resources?

Further Resources:

<http://www.atapuerca.com/> [A large website concerning the Atapuerca site, including a detailed discussion of hominin evolution].

<http://www.talkorigins.org/faqs/homs/species.html> [Summaries of all the principal hominin species, including details of many of the key fossil individuals].

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Simplified hominin family tree for the evolution of *Homo heidelbergensis*, the Neanderthals, and *Homo sapiens*